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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,655	11/19/2003	Scott K. Pozder	SC12955TP	6442
23125	7590	10/22/2004	EXAMINER	
FREESCALE SEMICONDUCTOR, INC. LAW DEPARTMENT 7700 WEST PARMER LANE MD:TX32/PL02 AUSTIN, TX 78729			VU, HUNG K	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 10/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/716,655	Applicant(s) POZDER ET AL.	
	Examiner Hung Vu	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 25-35 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11 is/are allowed.
- 6) ☐ Claim(s) 12-16 and 18-24 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/19/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Invention of Group I, Claims 1-24, in the reply filed on 08/04/04 is acknowledged.

Claims 25-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on 08/04/04.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14 and 19-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 14, 19, 20 and 22-24, "the substrate" lacks of antecedent basis. It is unclear as to whether which substrate being referred to.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 12-14 are rejected under 35 U.S.C. 102(a) as being anticipated by Enquist (PN 6,500,694, of record).

Enquist discloses, as shown in Figures 1-38B, an apparatus comprising:

a thinned integrated circuit wafer (10);

a support wafer (16) having a first characteristic, the first characteristic being at least one of the group consisting of thermally conductive, electrically conductive and magnetically permeable;

a glue (12,17) having the first characteristic, the glue being disposed between the integrated circuit wafer and the support wafer.

With regard to claim 13, Enquist discloses the integrated circuit wafer comprises a plurality of the integrated circuits.

With regard to claim 14, Enquist discloses the apparatus comprises a three-dimensional wafer-to-wafer bonded structure including the integrated circuits, a substrate and the glue.

4. Claims 12-16 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Xu (PN 6,761,813).

Xu discloses, as shown in Figures 1-5, an apparatus comprising:

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a thinned integrated circuit wafer (102);

a support wafer (104) having a first characteristic, the first characteristic being at least one of the group consisting of thermally conductive, electrically conductive and magnetically permeable;

a glue (106) having the first characteristic, the glue being disposed between the integrated circuit wafer and the support wafer.

With regard to claim 13, Xu discloses the integrated circuit wafer comprises a plurality of the integrated circuits.

With regard to claim 14, Xu discloses the apparatus comprises a three-dimensional wafer-to-wafer bonded structure including the integrated circuits, the substrate and the glue.

With regard to claim 15, Xu discloses the glue comprises:

a bonding agent;

a first characteristic enhancing agent.

With regard to claim 16, Xu discloses the bonding agent comprises one of the group consisting of benzocyclobutene (BCB) and an epoxy.

With regard to claim 18, Xu discloses the glue has a first thickness and the particles have an average maximum dimension not substantially greater than half the first thickness.

Allowable Subject Matter

5. Claims 1-11 are allowed.
6. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is an examiner's statement of reasons for allowance:

Applicant's claims 1-11 and 17 are allowable over the references of record because none of these references disclose or can be combined to yield the claimed apparatus comprising a magnetically permeable glue disposed between the active semiconductor substrate and the support substrate, in combination with the remaining claimed limitations of claim 1, and the first characteristic enhancing agent comprises a plurality of colloidal-sized particles suspended in the bonding agent, the colloidal particles being monolithic and coated nanosilica spheres, as recited in claim 17.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Mon-Thurs 6:00-3:30, alternate Friday 7:00-3:30, Eastern Time.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The Central Fax Number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

October 5, 2004

A handwritten signature in black ink, appearing to read "Hung Vu", written over a horizontal line.

Hung Vu

Patent Examiner